REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-7, 9-13, and 16-31 are presently active in this case, Claims 1, 4, 18, and 19 having been amended and Claims 20-31 having been added by way of the present Amendment.

The application provides support for the claim amendments, for example, in Figures 1, 2, and 4 and the corresponding written description thereof.

In the outstanding Official Action, Claims 1-7, 9-13, 16, and 17 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention. Specifically, the Official Action refers to the language regarding an impeller "having a shape and size varied in a vertical orientation, which variation achieving vertical flow of the yeast slurry. The Applicants respectfully traverse this rejection.

The standard for determining whether the specification meets the enablement requirement is whether one skilled in the art could make or use the invention from the disclosures in the application without undue or unreasonable experimentation. (See MPEP 2164.01.) In fact, the Federal Circuit has stated that a patent need not teach, and preferably omits, what is well known in the art. (See MPEP 2164.01.) The test of enablement is not

whether any experimentation is necessary, but whether, if experimentation is necessary, is it undue. (See MPEP 2164.01.)

With the above standards of enablement in mind, the Applicants note that the specification describes on page 10, line 20, through page 11, line 21, which clearly provides enabling support for the rejected limitation. More specifically, the specification describes a preferred embodiment in which an upper paddle blade (5a) intersects a lower paddle blade (5b) at an angle of 45 degrees as viewed from above, and that this phase difference causes a smooth vertical flow of the yeast slurry. (Page 10, lines 20-22.) While numerous other shapes and sizes of the stirring impeller can achieve such a desire vertical flow as recited and thus are encompassed within the scope of the recitation, the Applicants submit that the specification provides clear enabling support for a preferred embodiment, that the Applicants are not required to describe every possible permutation of such a feature in the application, and that one skilled in the art could make or use the invention from the disclosures in the application without undue or unreasonable experimentation. Accordingly, the Applicants respectfully request the withdrawal of the enablement rejection.

Claims 1-3, 9, 16, and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tetsuya et al. (JP 06-105680) in view of Mogi (JP 10-180228). Claims 4-7, 10-13, 17, and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Grylls et al. (U.S. Patent No. 4,188,407) in view of Tetsuya et al. and Mogi. For the reasons discussed below, the Applicants request the withdrawal of the obviousness rejections.

Claims 1 and 18 recite a stirred tank comprising a tank body and a stirring impeller

positioned within the tank body of the stirred tank. Claim 1 recites a stirring impeller made up of vertically oriented surfaces with no main stirring surface that is slanted from vertical, having a shape and size varied in a vertical orientation, which variation is configured to achieve vertical flow of the yeast slurry, and a tank body with a bottom portion having an inverted cone shape. Claim 18 recites a stirring impeller including vertically flat surfaced paddle blades with no main stirring surface that is slanted from vertical, and a tank body with a bottom portion having an inverted cone shape. The Applicants submit that the Tetsuya et al. reference and the Mogi reference, either when taken singularly or in combination, fail to disclose all of the above limitations recited in Claims 1 and 18 as will be discussed below.

As noted above, Claim 1 recites a stirring impeller made up of vertically oriented surfaces with no main stirring surface that is slanted from vertical, having a shape and size varied in a vertical orientation, which variation is configured to achieve vertical flow of the yeast slurry. The Official Action cites paragraph [0020] for the teaching of the stirring impeller. The Applicants submit that this paragraph describes the vertical tilting of the impeller blade at an angle between about 0 degrees and 15 degrees in order to create a convection of the cell culture in the vertical direction. To the contrary, the present invention as recited in Claim 1 includes a stirring impeller made up of vertically oriented surfaces with no main stirring surface that is slanted from vertical, yet the stirring impeller is further defined as having a shape and size varied in a vertical direction, which variation is configured to achieve vertical flow. The present invention in Claim 1 does not rely upon vertically tilted blades to achieve vertical flow, as is suggested in the Tetsuya et al. reference. Thus, the

Tetsuya et al. reference suggests that some degree, even if small, is necessary in order to achieve vertical flow. But, the Tetsuya et al. reference does not disclose or even suggest a stirring impeller made up of vertically oriented surfaces with no main stirring surface that is slanted from vertical, having a shape and size varied in a vertical direction, which variation is configured to achieve vertical flow, as recited in Claim 1. The configuration of the present invention advantageously provides a structure that achieves vertical flow without slanted main stirring surfaces, thereby providing a tank that can be easily cleaned thus ensuring sanitary conditions required for a tank for storing yeast slurry.

Additionally, the Applicants submit that the Mogi reference fails to supplement the above deficiency in the teaching of the Tetsuya et al. reference with respect to invention recited in Claim 1. The Mogi reference depicts an agitating shaft (2) furnished with plural impellers or stirring aerofoils (3) at regular intervals in the axial direction. As seen in Figures 2 and 3 and as described in paragraphs [0028] and [0029], the impellers have a top face (3a), tongue section (3b), an obtuse angle ramp (3c), and a tube part (3d). As can be seen in Figure 3 (which is rotated 90° counterclockwise from vertical), none of the surfaces of the stirring aerofoils (3) are vertically oriented or flat. Furthermore, the stirring aerofoils (3) clearly have slanting surfaces, as is evident from a review of the top face (3a) in Figure 3 and which is described in paragraph [0028] as being inclined at a predetermined angle. Thus, the Mogi reference also fails to disclose or even suggest a stirring impeller made up of vertically oriented surfaces with no main stirring surface that is slanted from vertical, having a shape and size varied in a vertical direction, which variation is configured to achieve vertical flow,

as recited in Claim 1.

Furthermore, the Official Action cites the Mogi reference for the teaching of a tank body with a bottom portion having an inverted cone shape, and combines this teaching with the teaching of the Tetsuya et al. reference. However, the Applicants respectfully submit that there is no motivation to make such a combination. More specifically, the Mogi reference relates to an apparatus for the treatment of garbage, which technology differs greatly from the technology used in stirred tanks for storing yeast slurry of the present invention, and from the culture tank for animal cells of the Tetsuya et al. reference. The Mogi reference has a conical bottom portion for ease of discharge of the garbage treated therein. However, there is no necessity in the culture tank for animal cells as described in the Tetsuya et al. reference to have an inverted conical bottom portion. Therefore, one of ordinary skill in the art would have had no motivation to combine the teachings of the Mogi reference with the structure described in the Tetsuya et al. reference, absent the improper use of hindsight considerations.

Accordingly, the Applicants submit that a *prima facie* case of obviousness cannot be established with respect to Claim 1 based on the combined teachings of the Tetsuya et al. reference and the Mogi reference.

The Tetsuya et al. reference also fails to disclose or suggest a stirring impeller including vertically flat surfaced paddle blades with no main stirring surface that is slanted from vertical, as recited in Claim 18. As noted above with respect to Claim 1, the Tetsuya et al. reference describes tilting the impeller blade at least to some degree in order to achieve the desired flow, and thus the Tetsuya et al. reference does not disclose blades with no main

stirring surface that is slanted from vertical. Furthermore, the Mogi reference fails to teach any vertically flat surfaced paddle blades with no main stirring surface that is slanted from vertical, as is discussed above with respect to Claim 1. Thus, the Mogi reference fails to supplement the deficiency in the teaching of the Tetsuya et al. reference with respect to Claim 18.

Furthermore, the arguments presented above with respect to the combination of the conical bottom portion of the Mogi reference with the structure described in the Tetsuya et al. reference set forth above with respect to Claim 1 also apply to Claim 18. Therefore, one of ordinary skill in the art would have had no motivation to combine the teachings of the Mogi reference with the structure described in the Tetsuya et al. reference, absent the improper use of hindsight considerations.

Accordingly, the Applicants submit that a *prima facie* case of obviousness cannot be established with respect to Claim 18 based on the combined teachings of the Tetsuya et al. reference and the Mogi reference.

Thus, the Applicants respectfully request the withdrawal of the obviousness rejections of Claims 1 and 18.

The claims that depend from Claims 1 and 18 are considered allowable for the reasons advanced for the independent claim from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed nor suggested by the applied references when those features are considered within the context of their respective independent claim.

Regarding the obviousness rejections of Claim 4 and 19, Claims 4 and 19 recite methods of manufacturing beer comprising, among other steps, providing a stirring impeller positioned within a tank body of the stirred tank. Claim 4 recites that the stirring impeller is made up of vertically oriented surfaces with no main stirring surface that is slanted from vertical, having a shape and a size varied in a vertical orientation, which variation achieving vertical flow of the yeast slurry, and positioned within a tank body of the stirred tank, the tank body has a substantially cylindrical shape with a bottom portion of an inverted cone shape, the height of the rotation body is 70% or more of a depth of the part of yeast slurry stored in the stirred tank. Claim 19 recites that the stirring impeller includes vertically flat surfaced paddle blades with no main stirring surface that is slanted from vertical, the tank body has a substantially cylindrical shape with a bottom portion of an inverted cone shape, the height of the rotation body is 70% or more of a depth of the part of yeast slurry stored in the stirred tank.

The Applicants respectfully submit that a *prima facie* case of obviousness has not been established in the present case base upon the combination of the Grylls et al. reference, the Tetsuya et al. reference, and the Mogi reference because (1) the references, either taken alone or in combination, do not teach or suggest all of the claim limitations, and (2) there is no suggestion or motivation to combine the references. (See MPEP 2143.)

At the outset, the Applicants note that the Examiner's comments on page 3 of the Official Action with respect to the depth of the yeast slurry exposed to the impeller being merely a statement of intended use, and therefore given no patentable weight, are not

applicable to Claims 4 and 19, which recite methods. The use dismissed on page 3 of the Official Action must be considered and given patentable weight when considering the methods recited in Claims 4 and 19, and any claims that depend therefrom. The cited references fail to disclose a height of the rotation body that is 70% or more of a depth of the part of yeast slurry stored in the stirred tank, as recited in Claims 4 and 19. A review of the figures in the Grylls et al. reference and the Mogi reference clearly show that these references fail to disclose this limitation. Furthermore, a review of Figures 1 and 3 and paragraph [0019] in the Tetsuya et al. reference clearly show that the Tetsuya et al. reference fails to supplement these deficiencies.

Additionally, the arguments presented above with respect to the combination of the conical bottom portion of the Mogi reference with the structure described in the Tetsuya et al. reference set forth above with respect to Claim 1 also apply to Claims 4 and 19. Therefore, one of ordinary skill in the art would have had no motivation to combine the teachings of the Mogi reference with the structure described in the Tetsuya et al. reference, absent the improper use of hindsight considerations. Furthermore, one of ordinary skill in the art would have had no motivation to combine the teachings of the Mogi reference with the structure for powdered dry yeast described in the Grylls et al. reference, absent the improper use of hindsight considerations.

Furthermore, the arguments in support of Claim 1 with respect to the stirring impeller recited therein apply to the recitation in Claim 4, and the arguments in support of Claim 18 with respect to the stirring impeller recited therein apply to the recitation in Claim 19.

Additionally, the Grylls et al. reference does not supplement the above noted deficiencies in the teachings of the Tetsuya et al. reference and the Mogi reference with respect to the recited stirring impeller of the present invention. The Grylls et al. reference describes a fluidized bed including a housing (1) having a stirrer rod (6) carried on a rotatable shaft (9). The rod (6) clearly does not teach a stirring impeller that is made up of vertically oriented surfaces with no main stirring surface that is slanted from vertical, as recited in Claim 4 of the present application, and a stirring impeller that includes vertically flat surfaced paddle blades with no main stirring surface that is slanted from vertical, as recited in Claim 19. The Grylls reference indicates that blades, rods, or bars can be used as a mechanical disintegrator of simple rectangular or circular cross-section, but specifically notes that the blades "should be twisted out of horizontal." (Col. 5, lines 13-16.) Such a twisted shape is similar to the teaching in the Mogi reference, as discussed above. Clearly such a teaching provides slanted surfaces. Accordingly, such a teaching is clearly distinguishing from a stirring impeller of the present invention.

Accordingly, the Applicants submit that a *prima facie* case of obviousness cannot be established with respect to Claims 4 and 19 based on the combined teachings of the Grylls et al. reference, the Tetsuya et al. reference and the Mogi reference. Thus, the Applicants respectfully request the withdrawal of the obviousness rejections of Claims 4 and 19.

The claims that depend from Claims 4 and 19 are considered allowable for the reasons advanced for the independent claim from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed

nor suggested by the applied references when those features are considered within the context of their respective independent claim.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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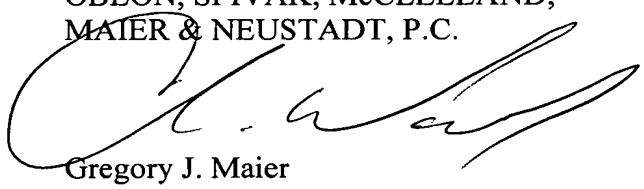

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